

ENVIRONMENTAL SCIENCE MERIT BADGE

For Parents - Merit badges are supposed to be done with the buddy system. If your scout does not have a buddy, you might consider attending this class with your scout. The program will not proceed unless there are 2 or more adults present. We will attempt to enlist adult volunteers from our center but this is not always possible so ***prepare for the possibility that you may have to stay for the program, especially the first session.***

Environmental Science – The Environmental Science program consists of two 2 ½ hour sessions. Scouts should be dressed appropriately for the weather. Part of our time will be spent outdoors. This is a very time consuming merit badge – and there will be home work.

Please bring:

- 4 sandwich size Ziploc bags for packaging material experiment
- Old plastic grocery bag to carry packaging material experiment
- Clipboard for taking notes outside
- (optional) a camera to document the experiment in 3(d)1 to help you make your poster.
- (optional) a plant or tree Identification book (we will have some to borrow).
- Blue card, pen and pencil
- Snack and water bottle
- All prework/homework should be brought to the 2nd class
- **ARRIVE ON TIME –EARLY IS BETTER! PLAN TO ARRIVE 10 MINUTES EARLY. IF SCOUTS ARE LATE, THEY WILL NOT COMPLETE THE BADGE.**

Worksheets will be provided during class.

The Environmental Science outline below contains the requirements that will be covered. Scouts will need to do some work at home – some work can be done anytime, but other projects must be completed between the first and second class. If for some reason you cannot complete the work in time, we will sign partial cards. Assignments will be accepted at a later date at which time we will fully sign your blue card. We promise to help in anyway throughout the process.

Bolded requirements #2, (#3d1), (#3e), and #5 and #6 need to be completed at home. For (#3d1) we will be performing the experiment in the first session. The experiment report is in the form of a poster which scouts will also need to prepare at home during the break week. You may want to bring a camera to document the experiment in 3d1 and help you make your poster. For the endangered species report for 3e, you can chose option 1 or 2. Please also research and record the definitions for requirement #2 before the 2nd class. We will review the definitions in class but there will not be time for your to record them into your packet. Scouts should also be prepared to discuss potential career choices (#6). There will be a handout for #5, which should be completed at home.

ENVIRONMENTAL SCIENCE MERIT BADGE REQUIREMENTS selectively showing the requirements that we will be doing in class at CRRC (denotes prework/homework)**

1. Make a timeline of the history of environmental science in America. Identify the contribution made by the Boy Scouts of America to environmental science. Include dates, names of people or organizations, and important events.
2. ****Define the following terms: population, community, ecosystem, biosphere, symbiosis, niche, habitat, conservation, threatened species, endangered species, extinction, pollution prevention, brownfield, ozone, watershed, airshed, nonpoint source, hybrid vehicle, fuel cell.**
3. Do ONE activity in EACH of the following categories (using the activities in this {the merit badge} pamphlet as the basis for planning and carrying out your projects):
 - a. Ecology
 1. Conduct an experiment to find out how living things respond to changes in their environment.
 - 2.
 - 3.
 - b. Air Pollution
 1. Perform an experiment to test for particulates that contribute to air pollution. Discuss your findings with your counselor.
 2. .
 - 3.
 - c. Water Pollution
 - 1.
 2. Conduct an experiment to identify the methods that could be used to mediate (reduce) the effects of an oil spill on waterfowl. Discuss your results with your counselor.
 - 3.
 - d. Land Pollution
 1. Conduct an experiment to illustrate soil erosion by water. Take photographs or make a drawing of the soil before and after your experiment, **and make a poster showing your results. Present your poster to your patrol or troop.**
 - 2.
 - e. ****Endangered Species (choose one)**
 1. **Do research on one endangered species found in your state. Find out what its natural habitat is, why it is endangered, what is being done to preserve it, and how many individual organisms are left in the wild. Prepare a 100-word report about the organism, including a drawing. Present your report to your patrol or troop.**

2. Do research on one species that was endangered or threatened but which has now recovered. Find out how the organism recovered, and what its new status is. Write a 100-word report on the species and discuss it with your counselor.

3.

f. Pollution Prevention, Resource Recovery, and Conservation

1.

2.

3. Perform an experiment on packaging materials to find out which ones are biodegradable. Discuss your conclusions with your counselor.

4. Choose two outdoor study areas that are very different from one another (e.g., hilltop vs. bottom of a hill; field vs. forest; swamp vs. dry land). For BOTH study areas, do ONE of the following:

a. Mark off a plot of 4 square yards in each study area, and count the number of species found there. Estimate how much space is occupied by each plant species and the type and number of nonplant species you find. Write a report that adequately discusses the biodiversity and population density of these study areas. Discuss your report with your counselor.

b. N/A

5. ****Using the construction project provided or a plan you create on your own, identify the items that would need to be included in an environmental impact statement for the project planned.**
6. **** Find out about three career opportunities in environmental science. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.**

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